

PATENT ABSTRACTS OF JAPAN

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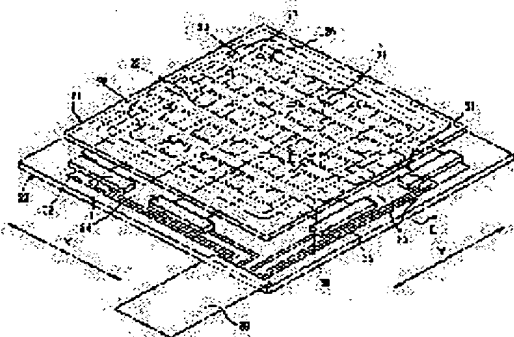
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(54) LIQUID CRYSTAL DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To simplify the structure of a liquid crystal device and to reduce its cost by managing with one FPC.

SOLUTION: This liquid crystal device has a liquid crystal 23 charged between an element substrate 20 and an opposite substrate 21 through an annular sealant 22 and has a mounting surface of the element substrate 20 for a driver IC 24 connected to pixel electrodes 26 and a mounting surface of the opposite substrate 21 for a driver IC 25 connected to scanning-side electrodes 29; and the driver IC 24 is mounted on the element substrate 20 and the driver IC 25 is mounted on the element substrate 20 by leading the electrode terminal part of the opposite substrate 21 out to the element substrate 20 through a conduction part 30.



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CLAIMS

[Claim(s)]

[Claim 1] Liquid crystal is enclosed through an annular sealant between the 1st substrate and the 2nd substrate. It is liquid crystal equipment equipped with a component side of a driver IC connected to a component side of a driver IC connected to an electrode of said 1st substrate, and an electrode of said 2nd substrate. Liquid crystal equipment characterized by mounting a driver IC which pulls out an electrode terminal area of said 2nd substrate to said 1st substrate through the flow section, and is connected to this 1st substrate at an electrode of said 2nd substrate while mounting a driver IC connected to an electrode of this 1st substrate in said 1st substrate.

[Claim 2] Liquid crystal equipment according to claim 1 characterized by having mixed a conductive particle in said sealant and constituting said flow section.

[Claim 3] Said flow section is liquid crystal equipment according to claim 1 characterized by being a resin-layer containing a conductive particle arranged on the outside of said sealant.

[Claim 4] Liquid crystal equipment which is liquid crystal equipment which liquid crystal was enclosed through an annular sealant between the 1st substrate and the 2nd substrate, and equipped said the 1st substrate and said 2nd substrate with a component side of a driver IC, respectively, and is characterized by pulling out wiring by the side of an input terminal of a driver IC mounted in said 2nd substrate to a component side of said 1st substrate through the flow section.

[Claim 5] Liquid crystal equipment given in any 1 term of claims 1-4 characterized by for said 1st substrate being an element substrate which has a switching element, and being the opposite substrate with which said 2nd substrate counters said element substrate, and is arranged.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] Liquid crystal is enclosed through a sealant between the element substrate which has a switching element, and the opposite substrate which counters it, and especially this invention relates to liquid crystal equipment equipped with the component side of the driver IC connected to the electrode of the component side of a driver IC and opposite substrate which are connected to the electrode of an element substrate.

[0002]

[Description of the Prior Art] As this conventional kind of liquid crystal equipment, what is shown, for example in drawing 7 is known. This liquid crystal equipment TFD which has conductor-insulating material-conductor structure as a switching element (Thin Film Diode: thin-film diode) Between the opposite substrates 2 by which opposite arrangement was carried out at this element substrate [with which the element was formed] 1, and element substrate 1 bottom Liquid crystal 4 is enclosed through the rectangular-head annular sealant 3, and project X side of the element substrate 1 in the direction of Y from X side of the opposite substrate 2, and a driver IC 5 is mounted in the upper surface of this lobe. Y sides of the opposite substrate 2 are projected in the direction of X from Y sides of the element substrate 1, and the driver IC 6 is mounted in the inferior surface of tongue of this lobe.

[0003] The output terminal of a driver IC 5 is connected to the pixel electrode 9 which is an electrode by the side of the element substrate 1 through the data line 7 and the TFD element 8 which are prolonged in the direction of Y, and the output terminal of a driver IC 6 is connected to the electrode terminal area of the counterelectrode 10 by the side of the opposite substrate 2 prolonged in the direction of X so that the pixel electrode 9 may be covered through the metal wiring 11.

[0004] On the other hand, the input terminal of a driver IC 5 is connected to FPC (flexible printed circuit board)12 attached X side of the element substrate 1 through the metal wiring 13, and the input terminal of a driver IC 6 is connected to FPC14 attached in Y sides of the opposite substrate 2 through the metal wiring 15.

[0005]

[Problem(s) to be Solved by the Invention] However, in this conventional liquid crystal equipment, since it is necessary to equip the element substrate 1 and the opposite substrate 2 with every one-sheet FPC of a total of two sheets, respectively, while structure becomes complicated, it is the hindrance of cost reduction.

[0006] This invention is made in order to cancel this un-arranging, and it aims at offering the liquid crystal equipment which can aim at simplification of structure, and reduction of cost.

[0007]

[Means for Solving the Problem] In order to attain this purpose, liquid crystal equipment concerning claim 1 Liquid crystal is enclosed through an annular sealant between the 1st substrate and the 2nd substrate. It is liquid crystal equipment equipped with a component side of a driver IC connected to a component side of a driver IC connected to an electrode of said 1st substrate, and an electrode of said 2nd substrate. While mounting a driver IC connected to an electrode of this 1st substrate in said 1st substrate, it is characterized by mounting a driver IC which pulls out an electrode terminal area of said 2nd substrate to

said 1st substrate through the flow section, and is connected to this 1st substrate at an electrode of said 2nd substrate.

[0008] According to this means, since FPC of one sheet is sufficient, an effect that simplification and cost reduction of structure can be planned is acquired.

[0009] In this case, an effect that a component side of each driver IC can be made advantageous on the stability of connection resistance and reduction in resistance by preparing at this element substrate is acquired considering the 1st substrate as an element substrate with much metal wiring.

[0010] Liquid crystal equipment concerning claim 2 is characterized by having mixed a conductive particle in said sealant and constituting said flow section in claim 1.

[0011] It is characterized by liquid crystal equipment concerning claim 3 being a resin layer which contains a conductive particle by which said flow section has been arranged on the outside of said sealant in claim 1.

[0012] Liquid crystal equipment concerning claim 4 is liquid crystal equipment which liquid crystal was enclosed through an annular sealant between the 1st substrate and the 2nd substrate, and equipped said the 1st substrate and said 2nd substrate with a component side of a driver IC, respectively, and is characterized by pulling out wiring by the side of an input terminal of a driver IC mounted in said 2nd substrate to a component side of said 1st substrate through the flow section.

[0013] According to this means, since FPC of one sheet is sufficient, an effect that simplification and cost reduction of structure can be planned is acquired.

[0014] Liquid crystal equipment concerning claim 5 is characterized by for said 1st substrate being an element substrate which has a switching element, and being the opposite substrate with which said 2nd substrate counters said element substrate, and is arranged.

[0015]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained with reference to drawing. An explanatory perspective diagram for an explanatory perspective diagram for an explanatory perspective diagram for drawing 1 to explain the liquid crystal equipment which is the gestalt of operation of the 1st mode of this invention, and drawing 2 to explain the II-II line cross section of drawing 1, and for drawing 3 explain the modification of the flow section, and drawing 4 to explain the liquid crystal equipment the IV-IV line cross section of drawing 3 and whose drawing 5 are the gestalten of operation of the 2nd mode of this invention, and drawing 6 are the VI-VI line cross sections of drawing 5.

[0016] First, with reference to drawing 1 and drawing 2, it explains from the liquid crystal equipment which is the gestalt of operation of the 1st mode of this invention.

[0017] This liquid crystal equipment between the opposite substrates (the 2nd substrate) 21 by which opposite arrangement was carried out at this element substrate (1st substrate) 20 and element substrate 20 bottom Liquid crystal 23 is enclosed through the rectangular-head annular sealant 22 in which the liquid crystal impregnation section which is not illustrated was prepared. Project X side of the element substrate 20 in the direction of Y from X side of the opposite substrate 21, and two driver ICs 24 estrange mutually in the direction of X on the upper surface of this lobe, and it is mounted by the COG (chip-on glass) method. Y sides of the element substrate 20 are projected in the direction of X from Y sides of the opposite substrate 21, two driver ICs 25 estrange them mutually in the direction of Y on the upper surface of this lobe, and COG mounting is carried out.

[0018] Two or more trains arrangement of the pixel electrode (electrode of the 1st substrate) 26 by which two or more formation was carried out at the predetermined gap in the direction of Y inside the sealant 22 of the upper surface of the element substrate 20 is carried out in the direction of X, and this pixel electrode 26 is connected to the output terminal of a driver IC 24 through the data line 28 prolonged in the TFD element 27 and the direction of Y. Moreover, two or more formation is carried out on the inferior surface of tongue of the opposite substrate 21 so that the data line of an element substrate may be intersected and the electrode 29 by the side of a scan in the direction of Y (electrode of the 2nd substrate) may lap with the pixel electrode 26 superficially.

[0019] Here, conductive particle 22a is mixed in the portion prolonged in the direction of Y in a driver IC 25 side among the rectangular-head annular sealants 22, and the flow section 30 consists of gestalten of this

operation. The electrode terminal area of the scan lateral electrode 29 touches the flow section 30 bottom, and thereby, while the electrode terminal area of the scan lateral electrode 29 is pulled out by the element substrate 20 through the flow section 30, it connects with the output terminal of a driver IC 25 through the metal wiring 31 formed in the component side by the side of Y sides of the element substrate 20.

[0020] The input terminal of a driver IC 24 is connected to FPC (flexible printed circuit board) 33 attached X side of this element substrate 20 through the metal wiring 32 formed in the component side by the side of X side of the element substrate 20. The input terminal of a driver IC 25 is connected to FPC 33 through the metal wiring 34 formed in the component side by the side of Y sides of the element substrate 20, and, thereby, each input terminal of driver ICs 24 and 25 is connected to common FPC 33 through the metal wiring 32 and 34.

[0021] Since FPC 33 of one sheet is sufficient, in the liquid crystal equipment of the gestalt of this operation, simplification and cost reduction of structure can be planned, so that clearly from the above-mentioned publication.

[0022] Moreover, since the component side of driver ICs 24 and 25 is prepared in the element substrate 20 side with much metal wiring, it can consider as an advantageous thing on the stability of connection resistance, and the reduction in resistance.

[0023] In addition, although the case where used the 1st substrate as the element substrate 20, and the component side of driver ICs 24 and 25 was prepared in the element substrate 20 side by using the 2nd substrate as the opposite substrate 21 was taken for the example with the gestalt of the above-mentioned implementation It replaces with this, and the 1st substrate is used as an opposite substrate, the component side of driver ICs 24 and 25 is prepared in an opposite substrate by using the 2nd substrate as an element substrate, and you may make it attach FPC in this opposite substrate side. In this case, although illustration is omitted, the driver IC 24 which pulls out the data line of an element substrate to an opposite substrate through the flow section, and is connected to this opposite substrate at the pixel electrode of an element substrate is mounted.

[0024] Moreover, although conductive particle 22a is mixed in a sealant 22 and the flow section 30 is constituted from a gestalt of the above-mentioned implementation In the outside location of the portion prolonged in the direction of Y in a driver IC 25 side among the rectangular-head annular sealants 22 as it replaces with this, for example, is shown in drawing 3 and drawing 4 ACF (anisotropy electric conduction film) which is a resin layer containing conductive particle 22a is made to extend along the direction of Y between the element substrate 20 and the opposite substrate 21, and it is good for it also considering this as the flow section 35.

[0025] When the liquid crystal equipment which is the gestalt of operation of the 2nd mode of this invention is explained with reference to drawing 5 and drawing 6, next, this liquid crystal equipment Liquid crystal 53 is enclosed with this element substrate (1st substrate) 50 and element substrate 50 bottom through the rectangular-head annular sealant 52 between the opposite substrates (the 2nd substrate) 51 by which opposite arrangement was carried out. Project X side of the element substrate 50 in the direction of Y from X side of the opposite substrate 51, and two driver ICs 54 estrange it mutually [the direction of X] on the upper surface of this lobe, and COG (chip-on glass) mounting is carried out. Y sides of the opposite substrate 51 are projected in the direction of X from Y sides of the element substrate 50, two driver ICs 55 estrange them mutually in the direction of Y on the inferior surface of tongue of this lobe, and COG mounting is carried out.

[0026] Inside the sealant 52 of the upper surface of the element substrate 50, two or more trains arrangement of the pixel electrode (electrode of the 1st substrate) 56 by which two or more formation was carried out at equal intervals is carried out in the direction of X in the direction of Y, and this pixel electrode 56 is connected to the output terminal of a driver IC 54 through the data line 58 prolonged in the TFD element 57 and the direction of Y. Moreover, two or more formation of the electrode 59 by the side of the scan prolonged in the direction of X so that the pixel electrode 56 may be covered in the inferior surface of tongue of the opposite substrate 51 (electrode of the 2nd substrate) is carried out at equal intervals in the direction of Y, and the electrode terminal area of this scan lateral electrode 59 is

connected to the output terminal of a driver IC 55 through the metal wiring 60 formed in the component side by the side of the opposite substrate 51.

[0027] The input terminal of a driver IC 54 is connected to FPC (flexible printed circuit board) 62 attached X side of this element substrate 50 through the metal wiring 61 formed in the component side of the element substrate 50. On the other hand, the metal wiring 63 by the side of the input terminal of the driver IC 55 formed in the component side of the opposite substrate 51. The conductive particle which intervened between the element substrate 50 and the opposite substrate 51 in the outside location of a sealant 52 (it does not illustrate.) While being pulled out by the component side of the element substrate 50 through the flow section (ACF) 64 which is the resin layer to contain It connects with FPC62 through the metal wiring 65 formed in the component side of the element substrate 50, and, thereby, each input terminal of driver ICs 54 and 55 is connected to common FPC62 through ACF64 and the metal wiring 61, 63, and 65.

[0028] Since FPC62 of one sheet is sufficient, in the liquid crystal equipment of the gestalt of this operation, simplification and cost reduction of structure can be planned, so that clearly from the above-mentioned publication.

[0029] In addition, although the case where used the 1st substrate as the element substrate 50, and the 2nd substrate was used as the opposite substrate 51 was taken for the example with the gestalt of the above-mentioned implementation, it is not limited to this, but the 1st substrate is used as an opposite substrate and you may make it attach FPC62 in an opposite substrate side by using the 2nd substrate as an element substrate. In this case, although illustration is omitted The input terminal of a driver IC 55 is connected to FPC62 attached in Y sides of this opposite substrate 51 through the metal wiring formed in the component side of the opposite substrate 51. It connects with FPC62 through the metal wiring which pulled out the metal wiring by the side of the input terminal of the driver IC 54 formed in the component side of the element substrate 50 to the component side of the opposite substrate 51 through ACF64, and was formed in the component side of this opposite substrate 51.

[0030]

[Effect of the Invention] Since FPC of one sheet is sufficient according to this invention so that clearly from the above-mentioned explanation, the effect that simplification and cost reduction of structure can be planned is acquired.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is an explanatory perspective diagram for explaining the liquid crystal equipment which is the gestalt of operation of the 1st mode of this invention.

[Drawing 2] It is the II-II line cross section of drawing 1 .

[Drawing 3] It is an explanatory perspective diagram for explaining the modification of the flow section.

[Drawing 4] It is the IV-IV line cross section of drawing 3 .

[Drawing 5] It is an explanatory perspective diagram for explaining the liquid crystal equipment which is the gestalt of operation of the 2nd mode of this invention.

[Drawing 6] It is the VI-VI line cross section of drawing 5 .

[Drawing 7] It is an explanatory perspective diagram for explaining conventional liquid crystal equipment.

[Description of Notations]

20 50 -- Element substrate (the 1st substrate)

21 51 -- Opposite substrate (the 2nd substrate)

22 52 -- Sealant

23 53 -- Liquid crystal

26 56 -- Pixel electrode (electrode of the 1st substrate)

24, 25, 54, 55 -- Driver IC

29 59 -- Scan lateral electrode (electrode of the 2nd substrate)

30, 35, 64 -- Flow section

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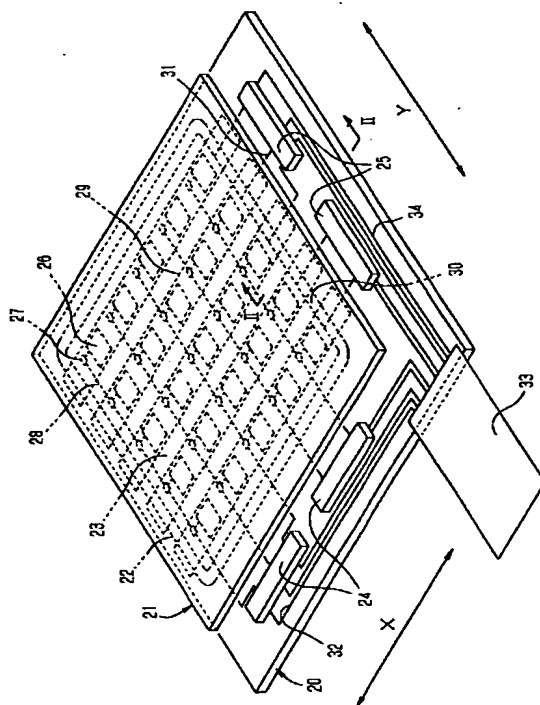
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(54)【発明の名称】 液晶装置

(57)【要約】

【課題】 F P C が一枚で足りるようにして構造の簡略化及びコストの低減を図る。

【解決手段】 素子基板 2 0 と対向基板 2 1 との間に環状のシール材 2 2 を介して液晶 2 3 が封入され、素子基板 2 0 の画素電極 2 6 に接続されるドライバ I C 2 4 の実装面及び対向基板 2 1 の走査側電極 2 9 に接続されるドライバ I C 2 5 の実装面を備えた液晶装置であって、素子基板 2 0 に該素子基板 2 0 の画素電極 2 6 に接続されるドライバ I C 2 4 を実装するとともに、対向基板 2 1 の電極端子部を導通部 3 0 を介して素子基板 2 0 に引き出して該素子基板 2 0 に対向基板 2 1 の走査側電極 2 9 に接続されるドライバ I C 2 5 を実装する。



(2)

【特許請求の範囲】

【請求項1】 第1の基板と第2の基板との間に環状のシール材を介して液晶が封入され、前記第1の基板の電極に接続されるドライバICの実装面及び前記第2の基板の電極に接続されるドライバICの実装面を備えた液晶装置であって、

前記第1の基板に該第1の基板の電極に接続されるドライバICを実装するとともに、前記第2の基板の電極端子部を導通部を介して前記第1の基板に引き出して該第1の基板に前記第2の基板の電極に接続されるドライバICを実装したことを特徴とする液晶装置。

【請求項2】 前記シール材に導電性粒子を混入して前記導通部を構成したことを特徴とする請求項1記載の液晶装置。

【請求項3】 前記導通部は、前記シール材の外側に配置された導電性粒子を含有する樹脂層であることを特徴とする請求項1記載の液晶装置。

【請求項4】 第1の基板と第2の基板との間に環状のシール材を介して液晶が封入され、前記第1の基板及び前記第2の基板にそれぞれドライバICの実装面を備えた液晶装置であって、

前記第2の基板に実装されたドライバICの入力端子側の配線を導通部を介して前記第1の基板の実装面に引き出したことを特徴とする液晶装置。

【請求項5】 前記第1の基板がスイッチング素子を有する素子基板であり、前記第2の基板が前記素子基板に対向して配置される対向基板であることを特徴とする請求項1～4のいずれか一項に記載の液晶装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、特にスイッチング素子を有する素子基板とそれに対向する対向基板との間にシール材を介して液晶が封入され、素子基板の電極に接続されるドライバICの実装面及び対向基板の電極に接続されるドライバICの実装面を備えた液晶装置に関する。

【0002】

【従来の技術】従来のこの種の液晶装置としては、例えば図7に示すものが知られている。この液晶装置は、スイッチング素子として導電体－絶縁体－導電体構造を有するTFD（Thin Film Diode：薄膜ダイオード）素子が形成された素子基板1と該素子基板1の上側に対向配置された対向基板2との間に四角環状のシール材3を介して液晶4が封入されており、素子基板1のX辺は対向基板2のX辺からY方向に突出して該突出部の上面にドライバIC5が実装され、対向基板2のY辺は素子基板1のY辺からX方向に突出して該突出部の下面にドライバIC6が実装されている。

【0003】ドライバIC5の出力端子はY方向に延びるデータ線7及びTFD素子8を介して素子基板1側の

電極である画素電極9に接続されており、ドライバIC6の出力端子は画素電極9を覆うようにX方向に延びる対向基板2側の対向電極10の電極端子部に金属配線11を介して接続されている。

【0004】一方、ドライバIC5の入力端子は素子基板1のX辺に取り付けられたFPC（フレキシブルプリント基板）12に金属配線13を介して接続されており、ドライバIC6の入力端子は対向基板2のY辺に取り付けられたFPC14に金属配線15を介して接続されている。

【0005】

【発明が解決しようとする課題】しかしながら、かかる従来の液晶装置においては、素子基板1及び対向基板2にそれぞれ一枚ずつ合計2枚のFPCを備える必要があるため、構造が複雑になるとともにコスト低減の妨げになっている。

【0006】本発明はかかる不都合を解消するためになされたものであり、構造の簡略化及びコストの低減を図ることができる液晶装置を提供することを目的とする。

【0007】

【課題を解決するための手段】かかる目的を達成するために、請求項1に係る液晶装置は、第1の基板と第2の基板との間に環状のシール材を介して液晶が封入され、前記第1の基板の電極に接続されるドライバICの実装面及び前記第2の基板の電極に接続されるドライバICの実装面を備えた液晶装置であって、前記第1の基板に該第1の基板の電極に接続されるドライバICを実装するとともに、前記第2の基板の電極端子部を導通部を介して前記第1の基板に引き出して該第1の基板に前記第2の基板の電極に接続されるドライバICを実装したことを特徴とする。

【0008】この手段によれば、一枚のFPCで足りるため、構造の簡略化とコスト低減を図ることができるという効果が得られる。

【0009】この場合、第1の基板を金属配線の多い素子基板として、該素子基板に各ドライバICの実装面を設けることにより、接続抵抗の安定性と低抵抗化の上で有利なものとすることができるという効果が得られる。

【0010】請求項2に係る液晶装置は、請求項1において、前記シール材に導電性粒子を混入して前記導通部を構成したことを特徴とする。

【0011】請求項3に係る液晶装置は、請求項1において、前記導通部は、前記シール材の外側に配置された導電性粒子を含有する樹脂層であることを特徴とする。

【0012】請求項4に係る液晶装置は、第1の基板と第2の基板との間に環状のシール材を介して液晶が封入され、前記第1の基板及び前記第2の基板にそれぞれドライバICの実装面を備えた液晶装置であって、前記第2の基板に実装されたドライバICの入力端子側の配線を導通部を介して前記第1の基板の実装面に引き出した

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ことを特徴とする。

【0013】この手段によれば、一枚のFPCで足りるため、構造の簡略化とコスト低減を図ることができるという効果が得られる。

【0014】請求項5に係る液晶装置は、前記第1の基板がスイッチング素子を有する素子基板であり、前記第2の基板が前記素子基板に対向して配置される対向基板であることを特徴とする。

【0015】

【発明の実施の形態】以下、本発明の実施の形態を図を参照して説明する。図1は本発明の第1の態様の実施の形態である液晶装置を説明するための説明的斜視図、図2は図1のI-I線断面図、図3は導通部の変形例を説明するための説明的斜視図、図4は図3のV-V線断面図、図5は本発明の第2の態様の実施の形態である液晶装置を説明するための説明的斜視図、図6は図5のV-V線断面図である。

【0016】まず、図1及び図2を参照して本発明の第1の態様の実施の形態である液晶装置から説明する。

【0017】この液晶装置は、素子基板（第1の基板）20と該素子基板20の上側に対向配置された対向基板（第2の基板）21との間に、図示しない液晶注入部が設けられた四角環状のシール材22を介して液晶23が封入されており、素子基板20のX辺は対向基板21のX辺からY方向に突出して該突出部の上面に二個のドライバIC24がX方向に互いに離間してCOG（チップ・オン・ガラス）方式により実装され、素子基板20のY辺は対向基板21のY辺からX方向に突出して該突出部の上面に二個のドライバIC25がY方向に互いに離間してCOG実装されている。

【0018】素子基板20の上面のシール材22の内側にはY方向に所定の間隔で複数形成された画素電極（第1の基板の電極）26がX方向に複数列配置されており、該画素電極26はTFD素子27及びY方向に延びるデータ線28を介してドライバIC24の出力端子に接続されている。また、対向基板21の下面には素子基板のデータ線と交差するようにY方向に走査側の電極（第2の基板の電極）29が、画素電極26と平面的に重なるように複数形成されている。

【0019】ここで、この実施の形態では、四角環状のシール材22のうちドライバIC25側でY方向に延びる部分に導電性粒子22aを混入して導通部30を構成している。導通部30の上側には走査側電極29の電極端子部が接触しており、これにより、走査側電極29の電極端子部が導通部30を介して素子基板20に引き出されるとともに、素子基板20のY辺側の実装面に形成された金属配線31を介してドライバIC25の出力端子に接続されている。

【0020】ドライバIC24の入力端子は素子基板20のX辺側の実装面に形成された金属配線32を介して

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該素子基板20のX辺に取り付けられたFPC（フレキシブルプリント基板）33に接続され、ドライバIC25の入力端子は素子基板20のY辺側の実装面に形成された金属配線34を介してFPC33に接続されており、これにより、ドライバIC24、25の各入力端子が金属配線32、34を介して共通のFPC33に接続されている。

【0021】上記の記載から明らかなように、この実施の形態の液晶装置においては、一枚のFPC33で足りるため、構造の簡略化とコスト低減を図ることができる。

【0022】また、ドライバIC24、25の実装面を金属配線の多い素子基板20側に設けているので、接続抵抗の安定性と低抵抗化の上で有利なものとすることができる。

【0023】なお、上記実施の形態では、第1の基板を素子基板20とし第2の基板を対向基板21として、素子基板20側にドライバIC24、25の実装面を設けた場合を例に採ったが、これに代えて、第1の基板を対向基板とし第2の基板を素子基板として、ドライバIC24、25の実装面を対向基板に設けて該対向基板側にFPCを取り付けるようにしてもよい。この場合、図示は省略するが、素子基板のデータ線を導通部を介して対向基板に引き出して該対向基板に素子基板の画素電極に接続されるドライバIC24を実装する。

【0024】また、上記実施の形態では、シール材22に導電性粒子22aを混入して導通部30を構成しているが、これに代えて、例えば図3及び図4に示すように、四角環状のシール材22のうちドライバIC25側でY方向に延びる部分の外側位置において、素子基板20と対向基板21の間に導電性粒子22aを含有する樹脂層であるACF（異方性導電膜）をY方向に沿って延在させてこれを導通部35としてもよい。

【0025】次に、図5及び図6を参照して本発明の第2の態様の実施の形態である液晶装置を説明すると、この液晶装置は、素子基板（第1の基板）50と該素子基板50の上側に対向配置された対向基板（第2の基板）51との間に四角環状のシール材52を介して液晶53が封入されており、素子基板50のX辺は対向基板51のX辺からY方向に突出して該突出部の上面に二個のドライバIC54がX方向に互いに離間してCOG（チップ・オン・ガラス）実装され、対向基板51のY辺は素子基板50のY辺からX方向に突出して該突出部の下面に二個のドライバIC55がY方向に互いに離間してCOG実装されている。

【0026】素子基板50の上面のシール材52の内側にはY方向に等間隔で複数形成された画素電極（第1の基板の電極）56がX方向に複数列配置されており、該画素電極56はTFD素子57及びY方向に延びるデータ線58を介してドライバIC54の出力端子に接続さ

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れている。また、対向基板51の下面には画素電極56を覆うようにX方向に延びる走査側の電極（第2の基板の電極）59がY方向に等間隔で複数形成されており、該走査側電極59の電極端子部は対向基板51側の実装面に形成された金属配線60を介してドライバIC55の出力端子に接続されている。

【0027】ドライバIC54の入力端子は素子基板50の実装面に形成された金属配線61を介して該素子基板50のX辺に取り付けられたFPC（フレキシブルプリント基板）62に接続されている。一方、対向基板51の実装面に形成されたドライバIC55の入力端子側の金属配線63は、シール材52の外側位置で素子基板50と対向基板51との間に介在された導電性粒子（図示せず。）を含有する樹脂層である導通部（ACF）64を介して素子基板50の実装面に引き出されるとともに、素子基板50の実装面に形成された金属配線65を介してFPC62に接続されており、これにより、ドライバIC54、55の各入力端子がACF64及び金属配線61、63、65を介して共通のFPC62に接続されている。

【0028】上記の記載から明らかなように、この実施の形態の液晶装置においては、一枚のFPC62で足りるため、構造の簡略化とコスト低減を図ることができる。

【0029】なお、上記実施の形態では、第1の基板を素子基板50とし第2の基板を対向基板51とした場合を例に採ったが、これに限定されず、第1の基板を対向基板とし第2の基板を素子基板として、対向基板側にFPC62を取り付けるようにしてもよい。この場合、図示は省略するが、ドライバIC55の入力端子を対向基板51の実装面に形成された金属配線を介して該対向基

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板51のY辺に取り付けられたFPC62に接続し、素子基板50の実装面に形成されたドライバIC54の入力端子側の金属配線をACF64を介して対向基板51の実装面に引き出して該対向基板51の実装面に形成された金属配線を介してFPC62に接続する。

【0030】

【発明の効果】上記の説明から明らかなように、本発明によれば、一枚のFPCで足りるため、構造の簡略化とコスト低減を図ることができるという効果が得られる。

【図面の簡単な説明】

【図1】本発明の第1の態様の実施の形態である液晶装置を説明するための説明的斜視図である。

【図2】図1のI-I線断面図である。

【図3】導通部の変形例を説明するための説明的斜視図である。

【図4】図3のIV-IV線断面図である。

【図5】本発明の第2の態様の実施の形態である液晶装置を説明するための説明的斜視図である。

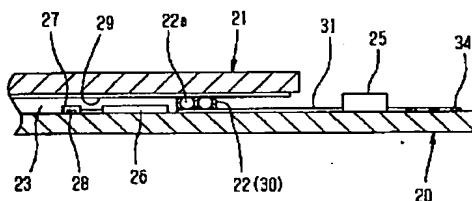
【図6】図5のVI-VI線断面図である。

【図7】従来の液晶装置を説明するための説明的斜視図である。

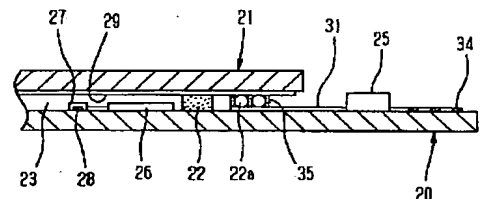
【符号の説明】

- 20, 50…素子基板（第1の基板）
- 21, 51…対向基板（第2の基板）
- 22, 52…シール材
- 23, 53…液晶
- 26, 56…画素電極（第1の基板の電極）
- 24, 25, 54, 55…ドライバIC
- 29, 59…走査側電極（第2の基板の電極）
- 30, 35, 64…導通部

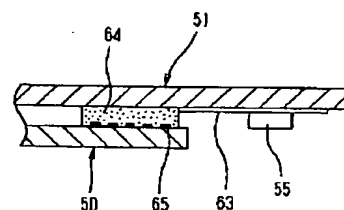
【図2】



【図4】

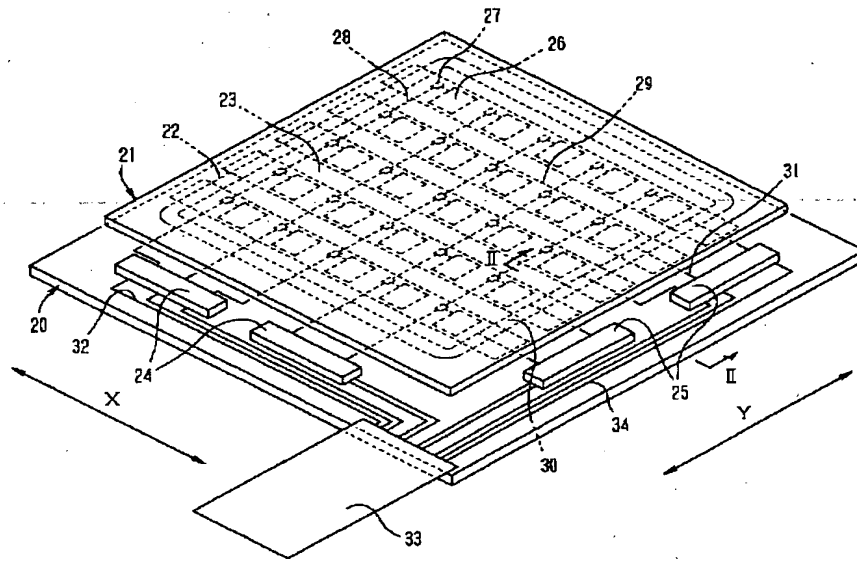


【図6】

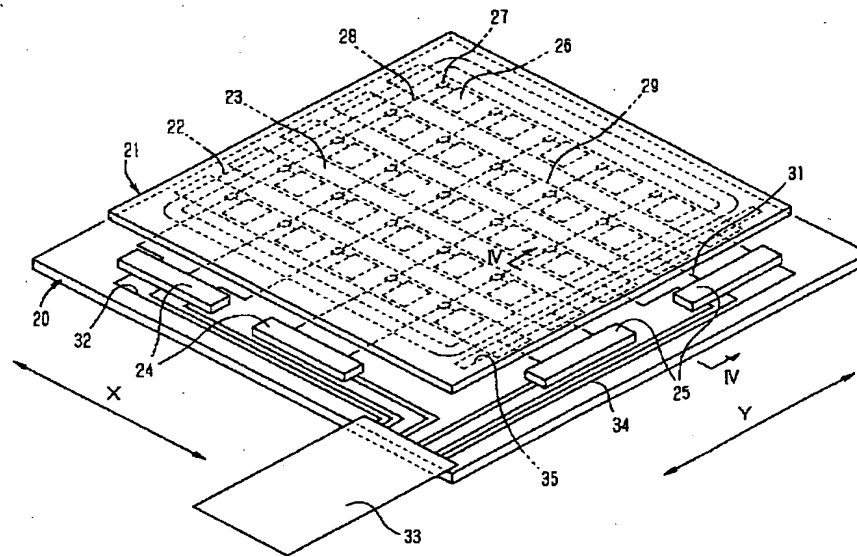


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【図1】

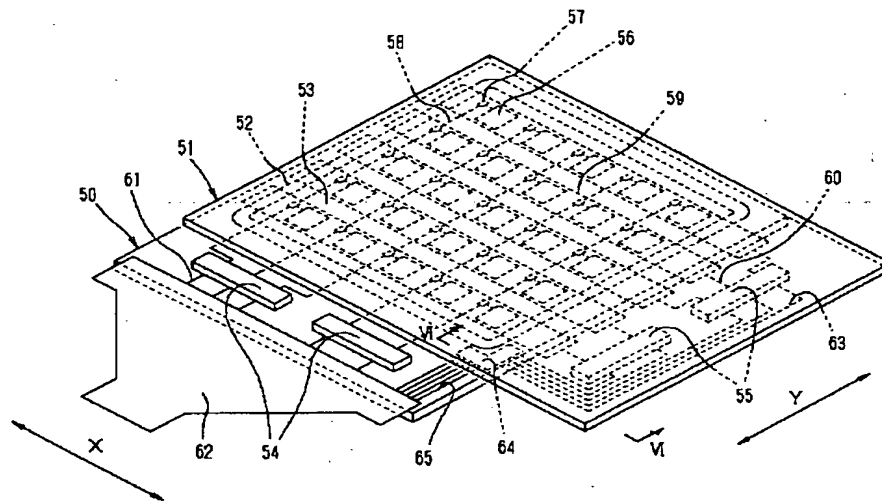


【図3】



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【図5】



【図7】

